CELLULAR BIOTECHNOLOGY
EDUCATION AND OUTREACH
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NASA CELLULAR BIOTECHNOLOGY WORD SEARCH

Advanced

BIOREACTOR
BIOTECHNOLOGY
BRAIN
CANCER
CARTILAGE
CELL
CYTOPLASM
DNA
EUKARYOTIC
HEART
KIDNEY
LUNG
LYMPHOCYTE
METAPLASIA
MICROGRAVITY
MITOCHONDRION
NUCLEUS
ORGANELLE
PHAGOCYTE
PROKARYOTIC
RIBOSOME
RNA
SPIROCHETE
TISSUE
TRANSCRIPTION

E P S N R K F S C B E D M K B N C S Y L P N R D E S M S M W X M U P
D L B N O W U L U L U E V I V I J E T Q A K L I V U D H G M A S Y P S
C M A S F I R Y L A T P O H T A Y W I Y K M Y O B S T S R L Q A Y U A
S K A Z D A T E Y A O T O O I R L W V O X I S R L O X N D T Y L T Y G
I C J F Y N P P L E M Y N E B G Q A T S H Y U Y V S L N J D P N H P
J F J K A Q L I C H R R Z S V Z T R U Q N M X M U Y O A T N O M H
Y W I G Z A T H R A O K P S M C J G H I F I U P C P N M G Q T J G
L R H S K N U K C Y E N D I K S O E B I S L H E H K B E S Y J Q
O U I S O D O P J S N V Z V I D R H P H A G O C Y T E P D C U
O A N L Q R X P H L N X O T C C C T X O D Q C M L S M P I R K
E E O G P Y M F Q M S A G Q K K I W C T Z A Y W Y Q W K I L
M G U B I O R E A C T O R L S C M A R I T N T W V C E X U D
Y Y E A K T T B G O V M G H T S V N A P H Z M E K Y A U O N K
I E W U L A E T E H C O R I P S C E L L I C E V R N W J Q A N E
J J Y T S I R Q B U Z Y H P A E H K E J W S Y I M N Y M W I U Q
T V X I W S T Y X Y X J R X R J J Y Q X Q S B S H T Y G M F C W
Q D Z D U K F I R O F L B N R J S L N O I R D N O H C O T I M L W
E S Q T G G Y N T A T X L E K I C W B Z T B E X Q A Q I U J J E S
S W D U G L B N T Z C I J G Z M T Y T Y L X Z B R N H S H L Q U S
S N N V K Z J X O N U C W K B I Y B P G S R J I P Q T P W B S F S

grades 10-12th

NASA CELLULAR BIOTECHNOLOGY

WORD SEARCH - DEFINITIONS

Bioreactor (bī'ō-rē-ăk'tər)
The bioreactor is a rotating wall vessel that is used to culture cells and tissues. By rotating the vessel, the cells remain in free fall which is similar to the microgravity environment.

Biotechnology (bī'ō-tĕk-nŏl'ə-jē)
Any technique that uses living organisms, or their parts, to make or modify products, to improve plants and animals, or to develop microorganisms for specific use. Biotechnology focuses on the practical applications of science as opposed to doing "science for science sake". Historically, biotechnology has had an impact in three main areas: health, food/agriculture and environmental protection. Biotechnologists try to solve problems in these and other areas such as the need to cure or prevent illness, for clean water, and to preserve food.

Brain (brān)
One of the two components of the central nervous system, the brain is the center of thought and emotion. It is responsible for the coordination and control of bodily activities and the interpretation of information from the senses (seeing, hearing, touching, smelling, and tasting).

Cancer (kăn'sər)
A syndrome that involves the uncontrolled and abnormal division of eukaryotic cells. Cancer cells can invade nearby tissue and can spread through the bloodstream and lymphatic system to other parts of the body.

Cartilage (kär'tl-ĭj)
Cartilage is the material that covers the bones. It is also one of the materials out of which the ears, the nose, and the trachea are made.

Cell (sĕl)
A cell is the smallest self-functioning unit found in living organisms. Each cell is enclosed by an outer membrane or wall and contains genetic material (DNA) and other parts to carry out its life functions. Some organisms such as bacteria consist of only one cell, but most of the organisms found on the Earth are made up of many cells.

Cytoplasm (sī'tə-plăz'əm)
The watery part of a cell surrounding the cell nucleus. It is made of protoplasm and contains a variety of organelles.

DNA
The material inside the nucleus of cells that carries genetic information. The scientific name for DNA is deoxyribonucleic acid.

Eukaryotic (yo͞o-kăr'ē-ŏt'ĭk)
Living species whose cells have a nuclear membrane separating the nucleus from the cytoplasm, as opposed to prokaryotic.

Heart (härt)
The four-chambered, muscular organ found behind the breastbone and between the lungs. Blood enters the right half of the heart and is pumped into the lungs to obtain oxygen. Oxygen-rich blood returns from the lungs into the left side of the heart where it is pumped out to the rest of the body.

Kidney (kĭd'nē)
One of the two bean-shaped organs located on both sides of the spine, just above the waist. They rid the body of waste materials and maintain fluid balance through the production of urine.

Lung (lŭng)
One of two respiratory organs that supplies oxygen to the blood and removes carbon dioxide.

Lymphocyte (lĭm'fə-sīt')
A small white blood cell that plays a major role in defending the body against disease. There are two main types of lymphocytes: B cells, which make antibodies that attack bacteria and toxins, and T cells, which attack body cells themselves when they have been taken over by viruses or become cancerous.

Metaplasia (mĕt'ə-plā'zhə)
A condition in which normal cells are replaced by other normal cells not usually found on that tissue.

Microgravity (mī'krō-grăv'ĭ-tē)
Microgravity is a term commonly applied to a condition of free-fall within a gravitational field in which the apparent weight of an object is reduced compared to its weight at rest on Earth.

Mitochondrion (mī'tə-kŏn'drē-ən)
An organelle of the cell that is responsible for energy production. The mitochondrion consists of two sets of membranes. Mitochondria convert nutrients into energy as well as doing many other specialized tasks.

Nucleus (no͞o'klē-əs)
A large, membrane-bound, usually spherical protoplasmic structure within a living cell, containing the cell's hereditary material and controlling its metabolism, growth, and reproduction.

Organelle (ôr'gə-nĕl')
Membrane-bound structure in a eukaryotic cell. Organelles partition the cell into regions which carry out different cellular functions.

Phagocyte (făg'ə-sīt')
A type of white blood cell that can engulf and destroy foreign organisms, cells and particles. Phagocytes are an important part of the immune system.

Prokaryotic (prō-kăr'ē-ōt'ĭk)
Cells that do not have a membrane-bounded nucleus or membrane-bounded organelles. Bacteria and cyanobacteria are prokaryotic.

Ribosome (rī'bə-sōm')
A molecular machine, found in all cells, which builds protein molecules according to instructions read from RNA molecules. Ribosomes are complex structures built of protein and RNA molecules.

RNA
Ribonucleic acid (RNA) is a similar molecule to DNA but with a slightly different structure. RNA carries the genetic information from DNA to those parts of the cell where proteins are made. There are several classes of RNA molecules, each serving a different function.

Spirochete (spī'rə-kēt')
A type of bacteria with a slender spiral shape.

Tissue (tĭ-sh͞o͞')
A group or layer of cells that together perform specific functions, such as skin cells or kidney cells.

Transcription (trăn-skrĭp'shən)
The process in living cells in which the genetic information of DNA is transferred to a complementary strand of messenger RNA (mRNA) as the first step in protein synthesis. Transcription takes place in the cell nucleus or nuclear region and the mRNA moves to the protein production site in the ribosome.